



Contents

00 - Technical data	1
1 Technical data	1
1.1 Technical data	1
1.2 Engine number	1
1.3 Engine data	1
10 - Removing and installing engine	2
1 Removing and installing engine	2
1.1 Removing and installing engine	2
1.2 Notes on removing	3
1.3 Securing engine to assembly stand	5
1.4 Notes on installing	6
1.5 Tightening torques	8
1.6 Assembly mountings	8
13 - Crankshaft group	10
1 Dismantling and assembling engine	10
1.1 Dismantling and assembling engine	10
1.2 Removing and installing ribbed belt	20
1.3 Removing, installing and tensioning toothed belt	21
1.4 Checking semi-automatic toothed belt tensioning roller	26
1.5 Removing single part injection pump sprocket	27
2 Removing and installing sealing flange and flywheel	28
2.1 Removing and installing sealing flange and flywheel	28
2.2 Renewing crankshaft oil seal -pulley end	31
3 Removing and installing crankshaft	34
3.1 Removing and installing crankshaft	34
3.2 Crankshaft dimensions	37
4 Dismantling and assembling pistons and conrods	38
4.1 Dismantling and assembling pistons and conrods	38
4.2 Checking piston projection at TDC	43
4.3 Piston and cylinder dimensions	44
15 - Cylinder head, Valve gear	45
1 Removing and installing cylinder head	45
1.1 Removing and installing cylinder head	45
1.2 Removing and installing cylinder head	53
1.3 Checking compression pressures	55
2 Servicing valve gear	57
2.1 Servicing valve gear	57
2.2 Reworking valve seats	63
2.3 Checking valve guides	64
2.4 Renewing valve guides	65
2.5 Renewing valve stem seals	66
2.6 Removing and installing camshaft	69
2.7 Checking hydraulic bucket tappets	71
17 - Lubrication	73
1 Removing and installing parts of the lubrication system	73
1.1 Removing and installing parts of the lubrication system	73
1.2 Checking oil pressure and oil pressure switch	80
19 - Cooling system	82



1	Removing and installing parts of cooling system	82
1.1	Removing and installing parts of cooling system	82
1.2	Parts of cooling system body side	83
1.3	Parts of cooling system engine side	86
1.4	Coolant hose connection diagram	89
1.5	Removing and installing coolant pump and compact bracket	90
1.6	Draining and filling cooling system	92
1.7	Removing and installing radiator	94
20 - Fuel supply system	96	
1	Removing and installing parts of fuel supply system	96
1.1	Removing and installing parts of fuel supply system	96
1.2	Removing and installing fuel tank with its attachments	96
1.3	Servicing fuel filter	101
1.4	Safety precautions when working on the fuel supply system	103
1.5	Rules for cleanliness	104
1.6	Removing and installing fuel tank	104
1.7	Servicing accelerator mechanism (80-pin control unit)	106
1.8	Checking accelerator pedal position sender (80-pin control unit)	108
1.9	Adjusting pedal position sender (80-pin control unit)	111
1.10	Servicing accelerator mechanism (121-pin control unit)	113
1.11	Checking accelerator pedal position sender (121-pin control unit)	116
1.12	Adjusting pedal position sender (121-pin control unit)	120
26 - Exhaust system	122	
1	Removing and installing parts of exhaust system	122
1.1	Removing and installing parts of exhaust system	122
2	Exhaust gas recirculation system	125
2.1	Exhaust gas recirculation system	125
2.2	Removing and installing parts of exhaust gas recirculation system	126
2.3	Vacuum hose connection diagram	127
2.4	Checking exhaust gas recirculation valve (mechanical)	128
2.5	Checking exhaust gas recirculation valve	129